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AN

INQUIRY

INTO

THE CAUSES AND EFFECTS

OF

THE VARIOLÆ VACCINÆ.

PRICE 7s. 6d.

BRITISH MUSEUM

AN

INQUIRY

INTO

THE CAUSES AND EFFECTS

OF

THE VARIOLÆ VACCINÆ,

A DISEASE

DISCOVERED IN SOME OF THE WESTERN COUNTIES OF ENGLAND,

PARTICULARLY

GLOUCESTERSHIRE,

AND KNOWN BY THE NAME OF

THE COW POX.

BY EDWARD JENNER, M. D. F. R. S. &c.

> ——— QUID NOBIS CERTIUS IPSIS
> SENSIBUS ESSE POTEST, QUO VERA AC FALSA NOTEMUS.
>
> LUCRETIUS.

London:
PRINTED, FOR THE AUTHOR,
BY SAMPSON LOW, N°. 7, BERWICK STREET, SOHO:
AND SOLD BY LAW, AVE-MARIA LANE; AND MURRAY AND HIGHLEY, FLEET STREET.

1798.

BRITISH MUSEUM

TO

C. H PARRY, M. D.

AT BATH.

MY DEAR FRIEND,

IN the preſent age of ſcientific inveſtigation, it is remarkable that a diſeaſe of ſo peculiar a nature as the Cow Pox, which has appeared in this and ſome of the neighbouring counties for ſuch a ſeries of years, ſhould ſo long have eſcaped particular attention. Finding the prevailing notions on the ſubject, both among men of our profeſſion and others, extremely vague and indeterminate, and conceiving that facts might appear at once both curious and uſeful, I have inſtituted as ſtrict an inquiry into the cauſes and effects of this ſingular malady as local circumſtances would admit.

The following pages are the reſult, which, from motives of the moſt affectionate regard, are dedicated to you, by

Your ſincere Friend,

EDWARD JENNER.

Berkeley, Glouceſterſhire,
June 21ſt, 1798.

AN

INQUIRY,

&c. &c.

THE deviation of Man from the ſtate in which he was originally placed by Nature ſeems to have proved to him a prolific ſource of Diſeaſes. From the love of ſplendour, from the indulgences of luxury, and from his fondneſs for amuſement, he has familiariſed himſelf with a great number of animals, which may not originally have been intended for his aſſociates.

The Wolf, diſarmed of ferocity, is now pillowed in the lady's lap*. The Cat, the little Tyger of our iſland, whoſe natural home is the foreſt, is equally domeſticated and careſſed. The Cow, the Hog, the Sheep, and the Horſe, are all, for a variety of purpoſes, brought under his care and dominion.

There is a diſeaſe to which the Horſe, from his ſtate of domeſtication, is frequently ſubject. The Farriers have termed it *the Greaſe*. It is an inflammation and ſwelling in the heel, from which iſſues matter poſſeſſing properties of a very peculiar kind, which ſeems capable of generating a diſeaſe in the Human Body (after it has undergone the modification which I ſhall preſently ſpeak of), which bears ſo ſtrong a reſemblance to the Small Pox, that I think it highly probable it may be the ſource of that diſeaſe.

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* The late Mr. John Hunter proved, by experiments, that the Dog is the Wolf in a degenerated ſtate.

In this Dairy Country a great number of Cows are kept, and the office of milking is performed indiſcriminately by Men and Maid Servants. One of the former having been appointed to apply dreſſings to the heels of a Horſe affected with *the Greaſe*, and not paying due attention to cleanlineſs, incautiouſly bears his part in milking the Cows, with ſome particles of the infectious matter adhering to his fingers. When this is the caſe, it commonly happens that a diſeaſe is communicated to the Cows, and from the Cows to the Dairy-maids, which ſpreads through the farm until moſt of the cattle and domeſtics feel its unpleaſant conſequences. This diſeaſe has obtained the name of the Cow Pox. It appears on the nipples of the Cows in the form of irregular puſtules. At their firſt appearance they are commonly of a paliſh blue, or rather of a colour ſomewhat approaching to livid, and are ſurrounded by an eryſipelatous inflammation. Theſe puſtules, unleſs a timely remedy be applied, frequently degenerate into phagedenic ulcers, which prove extremely troubleſome *. The animals become indiſpoſed, and the ſecretion of milk is much leſſened. Inflamed ſpots now begin to appear on different parts of the hands of the domeſtics employed in milking, and ſometimes on the wriſts, which quickly run on to ſuppuration, firſt aſſuming the appearance of the ſmall veſications produced by a burn. Moſt commonly they appear about the joints of the fingers, and at their extremities; but whatever parts are affected, if the ſituation will admit, theſe ſuperficial ſuppurations put on a circular form, with their edges more elevated than their centre, and of a

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* They who attend ſick cattle in this country find a ſpeedy remedy for ſtopping the progreſs of this complaint in thoſe applications which act chemically upon the morbid matter, ſuch as the ſolutions of the Vitriolum Zinci, the Vitriolum Cupri, &c.

colour diſtantly approaching to blue. Abſorption takes place, and tumours appear in each axilla. The ſyſtem becomes affected — the pulſe is quickened; and ſhiverings, with general laſſitude and pains about the loins and limbs, with vomiting, come on. The head is painful, and the patient is now and then even affected with delirium. Theſe ſymptoms, varying in their degrees of violence, generally continue from one day to three or four, leaving ulcerated ſores about the hands, which, from the ſenſibility of the parts, are very troubleſome, and commonly heal ſlowly, frequently becoming phagedenic, like thoſe from whence they ſprung. The lips, noſtrils, eyelids, and other parts of the body, are ſometimes affected with ſores; but theſe evidently ariſe from their being needleſsly rubbed or ſcratched with the patient's infected fingers. No eruptions on the ſkin have followed the decline of the feveriſh ſymptoms in any inſtance that has come under my inſpection, one only excepted, and in this caſe a very few appeared on the arms: they were very minute, of a vivid red colour, and ſoon died away without advancing to maturation; ſo that I cannot determine whether they had any connection with the preceding ſymptoms.

Thus the diſeaſe makes its progreſs from the Horſe to the nipple of the Cow, and from the Cow to the Human Subject.

Morbid matter of various kinds, when abſorbed into the ſyſtem, may produce effects in ſome degree ſimilar; but what renders the Cow-pox virus ſo extremely ſingular, is, that the perſon who has been thus affected is for ever after ſecure from the infection of the Small Pox; neither expoſure to the variolous effluvia, nor the inſertion of the matter into the ſkin, producing this diſtemper.

In ſupport of ſo extraordinary a fact, I ſhall lay before my Reader a great number of inſtances*.

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* It is neceſſary to obſerve, that puſtulous ſores frequently appear ſpontaneouſly on the nipples of Cows, and inſtances have occurred, though very rarely, of the hands of the ſervants employed in milking being affected with ſores in conſequence, and even of their feeling an indiſpoſition from abſorption. Theſe puſtules are of a much milder nature than thoſe which ariſe from that contagion which conſtitutes the true Cow Pox. They are always free from the bluiſh or livid tint ſo conſpicuous in the puſtules in that diſeaſe. No eryſipelas attends them, nor do they ſhew any phagedenic diſpoſition as in the other caſe, but quickly terminate in a ſcab without creating any apparent diſorder in the Cow. This complaint appears at various ſeaſons of the year, but moſt commonly in the Spring, when the Cows are firſt taken from their winter food and fed with graſs. It is very apt to appear alſo when they are ſuckling their young. But this diſeaſe is not be conſidered as ſimilar in any reſpect to that of which I am treating, as it is incapable of producing any ſpecific effects on the human Conſtitution. However, it is of the greateſt conſequence to point it out here, leſt the want of diſcrimination ſhould occaſion an idea of ſecurity from the infection of the Small Pox, which might prove deluſive.

CASE I.

JOSEPH MERRET, now an Under Gardener to the Earl of Berkeley, lived as a Servant with a Farmer near this place in the year 1770, and occaſionally aſſiſted in milking his maſter's cows. Several horſes belonging to the farm began to have ſore heels, which Merret frequently attended. The cows ſoon became affected with the Cow Pox, and ſoon after ſeveral ſores appeared on his hands. Swellings and ſtiffneſs in each axilla followed, and he was ſo much indiſpoſed for ſeveral days as to be incapable of purſuing his ordinary employment. Previouſly to the appearance of the diſtemper among the cows there was no freſh cow brought into the farm, nor any ſervant employed who was affected with the Cow Pox.

In April, 1795, a general inoculation taking place here, Merret was inoculated with his family; ſo that a period of twenty-five years had elapſed from his having the Cow Pox to this time. However, though the variolous matter was repeatedly inſerted into his arm, I found it impracticable to infect him with it; an efflorescence only, taking on an eryſipelatous look about the centre, appearing on the ſkin near the punctured parts. During the whole time that his family had the Small Pox, one of whom had it very full, he remained in the houſe with them, but received no injury from expoſure to the contagion.

It is neceſſary to obſerve, that the utmoſt care was taken to aſcertain, with the moſt ſcrupulous preciſion, that no one whoſe caſe is here adduced had gone through the Small Pox previous to theſe attempts to produce that diſeaſe.

Had theſe experiments been conducted in a large city, or in a populous neighbourhood, ſome doubts might have been entertained; but here, where population is thin, and where ſuch an event as a perſon's having had the Small Pox is always faithfully recorded, no riſk of inaccuracy in this particular can ariſe.

CASE II.

SARAH PORTLOCK, of this place, was infected with the Cow Pox, when a Servant at a Farmer's in the neighbourhood, twenty-ſeven years ago*.

In the year 1792, conceiving herſelf, from this circumſtance, ſecure from the infection of the Small Pox, ſhe nurſed one of her own children who had accidentally caught the diſeaſe, but no indiſpoſition enſued.—During the time ſhe remained in the infected room, variolous matter was inſerted into both her arms, but without any further effect than in the preceding caſe.

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* I have purpoſely ſelected ſeveral caſes in which the diſeaſe had appeared at a very diſtant period previous to the experiments made with variolous matter, to ſhew that the change produced in the conſtitution is not affected by time.

CASE III.

JOHN PHILLIPS, a Tradeſman of this town, had the Cow Pox at ſo early a period as nine years of age. At the age of ſixty-two I inoculated him, and was very careful in ſelecting matter in its moſt active ſtate. It was taken from the arm of a boy juſt before the commencement of the eruptive fever, and inſtantly inſerted. It very ſpeedily produced a ſting-like feel in the part. An efflореſcence appeared, which on the fourth day was rather extenſive, and ſome degree of pain and ſtiffneſs were felt about the ſhoulder; but on the fifth day theſe ſymptoms began to diſappear, and in a day or two after went entirely off, without producing any effect on the ſyſtem.

CASE IV.

MARY BARGE, of Woodford, in this pariſh, was inoculated with variolous matter in the year 1791. An effloreſcence of a paliſh red colour ſoon appeared about the parts where the matter was inſerted, and ſpread itſelf rather extenſively, but died away in a few days without producing any variolous ſymptoms*. She has ſince been repeatedly employed as a nurſe to Small-pox patients, without experiencing any ill conſequences. This woman had the Cow Pox when ſhe lived in the ſervice of a Farmer in this pariſh thirty-one years before.

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* It is remarkable that variolous matter, when the ſyſtem is diſpoſed to reject it, ſhould excite inflammation on the part to which it is applied more ſpeedily than when it produces the Small Pox. Indeed it becomes almoſt a criterion by which we can determine whether the infection will be received or not. It ſeems as if a change, which endures through life, had been produced in the action, or diſpoſition to action, in the veſſels of the ſkin; and it is remarkable too, that whether this change has been effected by the Small Pox, or the Cow Pox, that the diſpoſition to ſudden cuticular inflammation is the ſame on the application of variolous matter.

CASE V.

MRS. H——, a reſpectable Gentlewoman of this town, had the Cow Pox when very young. She received the infection in rather an uncommon manner: it was given by means of her handling ſome of the ſame utenſils * which were in uſe among the ſervants of the family, who had the diſeaſe from milking infected cows. Her hands had many of the Cow-pox ſores upon them, and they were communicated to her noſe, which became inflamed and very much ſwoln. Soon after this event Mrs. H—— was expoſed to the contagion of the Small Pox, where it was ſcarcely poſſible for her to have eſcaped, had ſhe been ſuſceptible of it, as ſhe regularly attended a relative who had the diſeaſe in ſo violent a degree that it proved fatal to him.

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* When the Cow Pox has prevailed in the dairy, it has often been communicated to thoſe who have not milked the cows, by the handle of the milk pail.

In the year 1778 the Small Pox prevailed very much at Berkeley, and Mrs. H—— not feeling perfectly ſatisfied reſpecting her ſafety (no indiſpoſition having followed her expoſure to the Small Pox) I inoculated her with active variolous matter. The ſame appearance followed as in the preceding caſes — an efflorescence on the arm without any effect on the conſtitution.

CASE VI.

IT is a fact ſo well known among our Dairy Farmers, that thoſe who have had the Small Pox either eſcape the Cow Pox or are diſpoſed to have it ſlightly; that as ſoon as the complaint ſhews itſelf among the cattle, aſſiſtants are procured, if poſſible, who are thus rendered leſs ſuſceptible of it, otherwiſe the buſineſs of the farm could ſcarcely go forward.

In the month of May, 1796, the Cow Pox broke out at Mr. Baker's, a Farmer who lives near this place. The diſeaſe was communicated by means of a cow which was purchaſed in an infected ſtate at a neighbouring fair, and not one of the Farmer's cows (conſiſting of thirty) which were at that time milked eſcaped the contagion. The family conſiſted of a man ſervant, two dairymaids, and a ſervant boy, who, with the Farmer himſelf, were twice a day employed in milking the cattle. The whole of this family, except Sarah Wynne, one of the dairymaids, had gone through the Small Pox. The conſequence was, that the Farmer and the ſervant boy eſcaped the infection of the Cow Pox entirely, and the ſervant man and one of the maid ſervants had each of them nothing more than a ſore on one of their fingers, which produced no diſorder in the ſyſtem. But the other dairymaid, Sarah Wynne, who never had the Small Pox, did not eſcape in ſo eaſy a manner. She caught the complaint from the cows, and was affected with the ſymptoms deſcribed in the 5th page in ſo violent a degree, that ſhe was confined to her bed, and rendered incapable for ſeveral days of purſuing her ordinary vocations in the farm.

March 28th, 1797, I inoculated this girl, and carefully rubbed the variolous matter into two ſlight inciſions made upon the left arm. A little inflammation appeared in the uſual manner around the parts where the matter was inſerted, but ſo early as the fifth day it vaniſhed entirely without producing any effect on the ſyſtem.

CASE VII.

ALTHOUGH the preceding hiſtory pretty clearly evinces that the conſtitution is far leſs ſuſceptible of the contagion of the Cow Pox after it has felt that of the Small Pox, and although in general, as I have obſerved, they who have had the Small Pox, and are employed in milking cows which are infected with the Cow Pox, either eſcape the diſorder, or have ſores on the hands without feeling any general indiſpoſition, yet the animal economy is ſubject to ſome variation in this reſpect, which the following relation will point out:

In the ſummer of the year 1796 the Cow Pox appeared at the Farm of Mr. Andrews, a conſiderable dairy adjoining to the town of Berkeley. It was communicated, as in the preceding inſtance, by an infected cow purchaſed at a fair in the neighbourhood. The family conſiſted of the Farmer, his wife, two ſons, a man and a maid ſervant; all of whom, except the Farmer (who was fearful of the conſequences), bore a part in milking the cows. The whole of them, excluſive of the man ſervant, had regularly gone through the Small Pox; but in this caſe no one who milked the cows eſcaped the contagion. All of them had ſores upon their hands, and ſome degree of general indiſpoſition, preceded by pains and tumours in the axillæ: but there was no compariſon in the ſeverity of the diſeaſe as it was felt by the ſervant man, who had eſcaped the Small Pox, and by thoſe of the family who had not, for, while he was confined to his bed, they were able, without much inconvenience, to follow their ordinary buſineſs.

February the 13th, 1797, I availed myſelf of an opportunity of inoculating William Rodway, the ſervant man above alluded to. Variolous matter was inſerted into both his arms; in the right by means of ſuperficial inciſions, and into the left by ſlight punctures into the cutis. Both were perceptibly inflamed on the third day. After this the inflammation about the punctures ſoon died away, but a ſmall appearance of eryſipelas was manifeſt about the edges of the inciſions till the eighth day, when a little uneaſineſs was felt for the ſpace of half an hour in the right axilla. The inflammation then haſtily diſappeared without producing the moſt diſtant mark of affection of the ſyſtem.

CASE VIII.

ELIZABETH WYNNE, aged fifty-ſeven, lived as a ſervant with a neighbouring Farmer thirty-eight years ago. She was then a dairymaid, and the Cow Pox broke out among the cows. She caught the diſeaſe with the reſt of the family, but, compared with them, had it in a very ſlight degree, one very ſmall ſore only breaking out on the little finger of her left hand, and ſcarcely any perceptible indiſpoſition following it.

As the malady had ſhewn itſelf in ſo ſlight a manner, and as it had taken place at ſo diſtant a period of her life, I was happy with the opportunity of trying the effects of variolous matter upon her conſtitution, and on the 28th of March, 1797, I inoculated her by making two ſuperficial inciſions on the left arm, on which the matter was cautiouſly rubbed. A little effloreſcence ſoon appeared, and a tingling ſenſation was felt about the parts where the matter was inſerted until the third day, when both began to ſubſide, and ſo early as the fifth day it was evident that no indiſpoſition would follow.

CASE IX.

ALTHOUGH the Cow Pox ſhields the conſtitution from the Small Pox, and the Small Pox proves a protection againſt its own future poiſon, yet it appears that the human body is again and again ſuſceptible of the infectious matter of the Cow Pox, as the following hiſtory will demonſtrate:

William Smith, of Pyrton in this pariſh, contracted this diſeaſe when he lived with a neighbouring Farmer in the year 1780. One of the horſes belonging to the farm had ſore heels, and it fell to his lot to attend him. By theſe means the infection was carried to the cows, and from the cows it was communicated to Smith. On one of his hands were ſeveral ulcerated ſores, and he was affected with ſuch ſymptoms as have been before deſcribed.

In the year 1791 the Cow Pox broke out at another farm where he then lived as a ſervant, and he became affected with it a ſecond time; and in the year 1794 he was ſo unfortunate as to catch it again. The diſeaſe was equally as ſevere the ſecond and third time as it was on the firſt *.

In the ſpring of the year 1795 he was twice inoculated, but no affection of the ſyſtem could be produced from the variolous matter; and he has ſince aſſociated with thoſe who had the Small Pox in its moſt contagious ſtate without feeling any effect from it.

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* This is not the caſe in general — a ſecond attack is commonly very ſlight, and ſo, I am informed, it is among the cows.

CASE X.

SIMON NICHOLS lived as a ſervant with Mr. Bromedge, a gentleman who reſides on his own farm in this pariſh, in the year 1782. He was employed in applying dreſſings to the ſore heels of one of his maſter's horſes, and at the ſame time aſſiſted in milking the cows. The cows became affected in conſequence, but the diſeaſe did not ſhew itſelf on their nipples till ſeveral weeks after he had begun to dreſs the horſe. He quitted Mr. Bromedge's ſervice, and went to another farm without any ſores upon him; but here his hands ſoon began to be affected in the common way, and he was much indiſpoſed with the uſual ſymptoms. Concealing the nature of the malady from Mr. Cole, his new maſter, and being there alſo employed in milking, the Cow Pox was communicated to the cows.

Some years afterwards Nichols was employed in a farm where the Small Pox broke out, when I inoculated him with ſeveral other patients, with whom he continued during the whole time of their confinement. His arm inflamed, but neither the inflammation nor his aſſociating with the inoculated family produced the leaſt effect upon his conſtitution.

CASE XI.

WILLIAM STINCHCOMB was a fellow ſervant with Nichols at Mr. Bromedge's Farm at the time the cattle had the Cow Pox, and he was unfortunately infected by them. His left hand was very ſeverely affected with ſeveral corroding ulcers, and a tumour of conſiderable ſize appeared in the axilla of that ſide. His right hand had only one ſmall ſore upon it, and no ſore diſcovered itſelf in the correſponding axilla.

In the year 1792 Stinchcomb was inoculated with variolous matter, but no conſequences enſued beyond a little inflammation in the arm for a few days. A large party were inoculated at the ſame time, ſome of whom had the diſeaſe in a more violent degree than is commonly ſeen from inoculation. He purpoſely aſſociated with them, but could not receive the Small Pox.

During the ſickening of ſome of his companions, their ſymptoms ſo ſtrongly recalled to his mind his own ſtate when ſickening with the Cow Pox, that he very pertinently remarked their ſtriking ſimilarity.

CASE XII.

THE Paupers of the village of Tortworth, in this county, were inoculated by Mr. Henry Jenner, Surgeon, of Berkeley, in the year 1795. Among them, eight patients preſented themſelves who had at different periods of their lives had the Cow Pox. One of them, Heſter Walkley, I attended with that diſeaſe when ſhe lived in the ſervice of a Farmer in the ſame village in the year 1782; but neither this woman, nor any other of the patients who had gone through the Cow Pox, received the variolous infection either from the arm or from mixing in the ſociety of the other patients who were inoculated at the ſame time. This ſtate of ſecurity proved a fortunate circumſtance, as many of the poor women were at the ſame time in a ſtate of pregnancy.

CASE XIII.

One inſtance has occurred to me of the ſyſtem being affected from the matter iſſuing from the heels of horſes, and of its remaining afterwards unſuſceptible of the variolous contagion; another, where the Small Pox appeared obſcurely; and a third, in which its complete exiſtence was poſitively aſcertained.

Firſt, THOMAS PEARCE, is the ſon of a Smith and Farrier near to this place. He never had the Cow Pox; but, in conſequence of dreſſing horſes with ſore heels at his father's, when a lad, he had ſores on his fingers which ſuppurated, and which occaſioned a pretty ſevere indiſpoſition. Six years afterwards I inſerted variolous matter into his arm repeatedly, without being able to produce any thing more than ſlight inflammation, which appeared very ſoon after the matter was applied, and afterwards I expoſed him to the contagion of the Small Pox with as little effect *.

CASE XIV.

Secondly, Mr. JAMES COLE, a Farmer in this pariſh, had a diſeaſe from the ſame ſource as related in the preceding caſe, and ſome years after was inoculated with variolous matter. He had a little pain in the axilla, and felt a ſlight indiſpoſition for three or four hours. A few eruptions ſhewed themſelves on the forehead, but they very ſoon diſappeared without advancing to maturation.

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* It is a remarkable fact, and well known to many, that we are frequently foiled in our endeavours to communicate the Small Pox by inoculation to blackſmiths, who in the country are farriers. They often, as in the above inſtance, either reſiſt the contagion entirely, or have the diſeaſe anomalouſly. Shall we not be able now to account for this on a rational principle ?

CASE XV.

Although in the two former inſtances the ſyſtem ſeemed to be ſecured, or nearly ſo, from variolous infection, by the abſorption of matter from ſores produced by the diſeaſed heels of horſes, yet the following caſe deciſively proves that this cannot be entirely relied upon, until a diſeaſe has been generated by the morbid matter from the horſe on the nipple of the cow, and paſſed through that medium to the human ſubject.

Mr. ABRAHAM RIDDIFORD, a Farmer at Stone in this pariſh, in conſequence of dreſſing a mare that had ſore heels, was affected with very painful ſores in both his hands, tumours in each axilla, and ſevere and general indiſpoſition. A Surgeon in the neighbourhood attended him, who, knowing the ſimilarity between the appearance of the ſores upon his hands and thoſe produced by the

Cow Pox, and being acquainted alſo with the effects of that diſeaſe on the human conſtitution, aſſured him that he never need to fear the infection of the Small Pox; but this aſſertion proved fallacious, for, on being expoſed to the infection upwards of twenty years afterwards, he caught the diſeaſe, which took its regular courſe in a very mild way. There certainly was a difference perceptible, although it is not eaſy to deſcribe it, in the general appearance of the puſtules from that which we commonly ſee. Other practitioners, who viſited the patient at my requeſt, agreed with me in this point, though there was no room left for ſuſpicion as to the reality of the diſeaſe, as I inoculated ſome of his family from the puſtules, who had the Small Pox, with its uſual appearances, in conſequence.

CASE XVI.

SARAH NELMES, a dairymaid at a Farmer's near this place, was infected with the Cow Pox from her maſter's cows in May, 1796. She received the infection on a part of the hand which had been previouſly in a ſlight degree injured by a ſcratch from a thorn. A large puſtulous ſore and the uſual ſymptoms accompanying the diſeaſe were produced in conſequence. The puſtule was ſo expreſſive of the true character of the Cow Pox, as it commonly appears upon the hand, that I have given a repreſentation of it in the annexed plate. The two ſmall puſtules on the wriſts aroſe alſo from the application of the virus to ſome minute abraſions of the cuticle, but the livid tint, if they ever had any, was not conſpicuous at the time I ſaw the patient. The puſtule on the fore finger ſhews the diſeaſe in an earlier ſtage. It did not actually appear on the hand of this young woman, but was taken from that of another, and is annexed for the purpoſe of repreſenting the malady after it has newly appeared.

CASE XVII.

THE more accurately to obſerve the progreſs of the infection, I ſelected a healthy boy, about eight years old, for the purpoſe of inoculation for the Cow Pox. The matter was taken from a ſore on the hand of a dairymaid *, who was infected by her maſter's cows, and it was inſerted, on the 14th of May, 1796, into the arm of the boy by means of two ſuperficial inciſions, barely penetrating the cutis, each about half an inch long.

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* From the ſore on the hand of Sarah Nelmes. — See the preceding caſe and the plate.

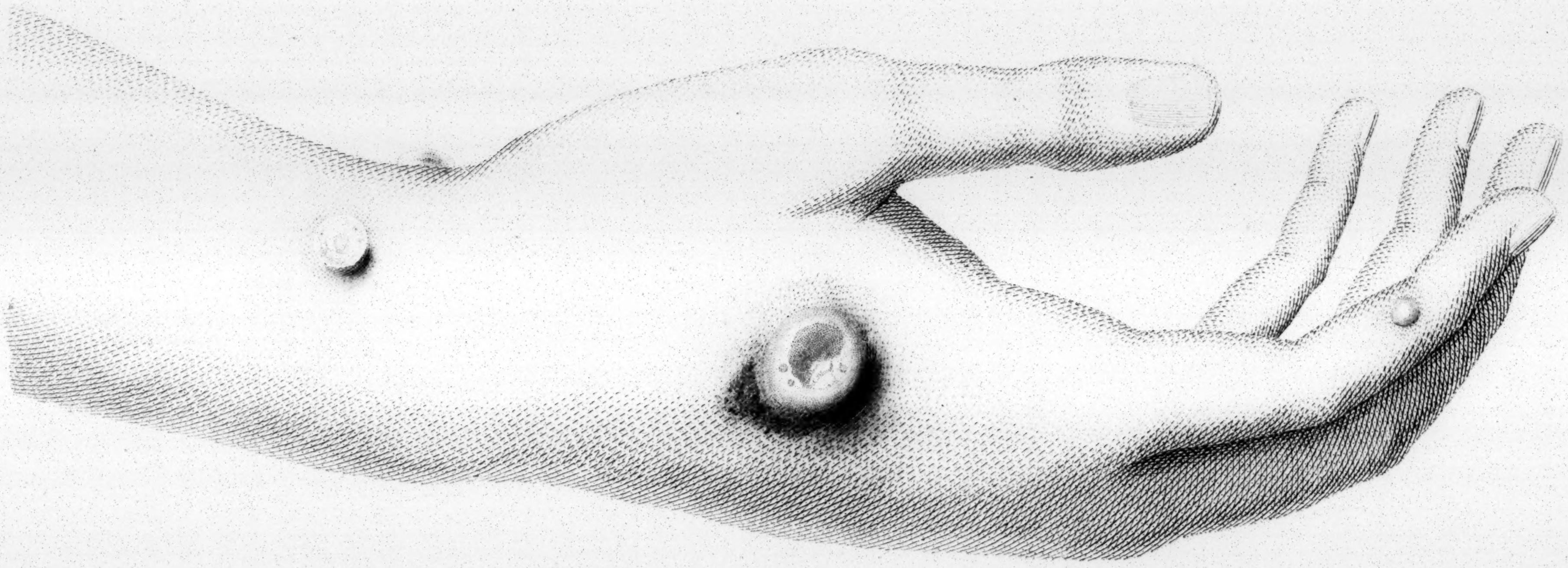
On the ſeventh day he complained of uneaſineſs in the axilla, and on the ninth he became a little chilly, loſt his appetite, and had a ſlight head-ach. During the whole of this day he was perceptibly indiſpoſed, and ſpent the night with ſome degree of reſtleſſneſs, but on the day following he was perfectly well.

The appearance of the inciſions in their progreſs to a ſtate of maturation were much the ſame as when produced in a ſimilar manner by variolous matter. The only difference which I perceived was, in the ſtate of the limpid fluid ariſing from the action of the virus, which aſſumed rather a darker hue, and in that of the efflореſcence ſpreading round the inciſions, which had more of an eryſipelatous look than we commonly perceive when variolous matter has been made uſe of in the ſame manner; but the whole died away (leaving on the inoculated parts ſcabs and ſubſequent eſchars) without giving me or my patient the leaſt trouble.

In order to aſcertain whether the boy, after feeling ſo ſlight an affection of the ſyſtem from the Cow-pox virus, was ſecure from the contagion of the Small-pox, he was inoculated the 1ſt of July following with variolous matter, immediately taken from a puſtule. Several ſlight punctures and inciſions were made on both his arms, and the matter was carefully inſerted, but no diſeaſe followed. The ſame appearances were obſervable on the arms as we commonly ſee when a patient has had variolous matter applied, after having either the Cow-pox or the Small-pox. Several months afterwards, he was again inoculated with variolous matter, but no ſenſible effect was produced on the conſtitution.

Here my reſearches were interrupted till the ſpring of the year 1798, when from the wetneſs of the early part of the ſeaſon, many of the farmers' horſes in this neighbourhood were affected with ſore heels, in conſequence of which the Cow-pox broke out among ſeveral of our dairies, which afforded me an opportunity of making further obſervations upon this curious diſeaſe.

N.º 1.



W. Skelton del^{t}. et sculp^{t}.

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MUSEUM

A mare, the property of a perſon who keeps a dairy in a neighbouring pariſh, began to have ſore heels the latter end of the month of February 1798, which were occaſionally waſhed by the ſervant men of the farm, Thomas Virgoe, William Wherret, and William Haynes, who in conſequence became affected with ſores in their hands, followed by inflamed lymphatic glands in the arms and axillæ, ſhiverings ſucceeded by heat, laſſitude and general pains in the limbs. A ſingle paroxyſm terminated the diſeaſe; for within twenty-four hours they were free from general indiſpoſition, nothing remaining but the ſores on their hands. Haynes and Virgoe, who had gone through the Small-pox from inoculation, deſcribed their feelings as very ſimilar to thoſe which affected them on ſickening with that malady. Wherret never had had the Small-pox. Haynes was daily employed as one of the milkers at the farm, and the diſeaſe began to ſhew itſelf among the cows about ten days after he firſt aſſiſted in waſhing the mare's heels. Their nipples became ſore in the uſual way, with blueiſh puſtules; but as remedies were early applied they did not ulcerate to any extent.

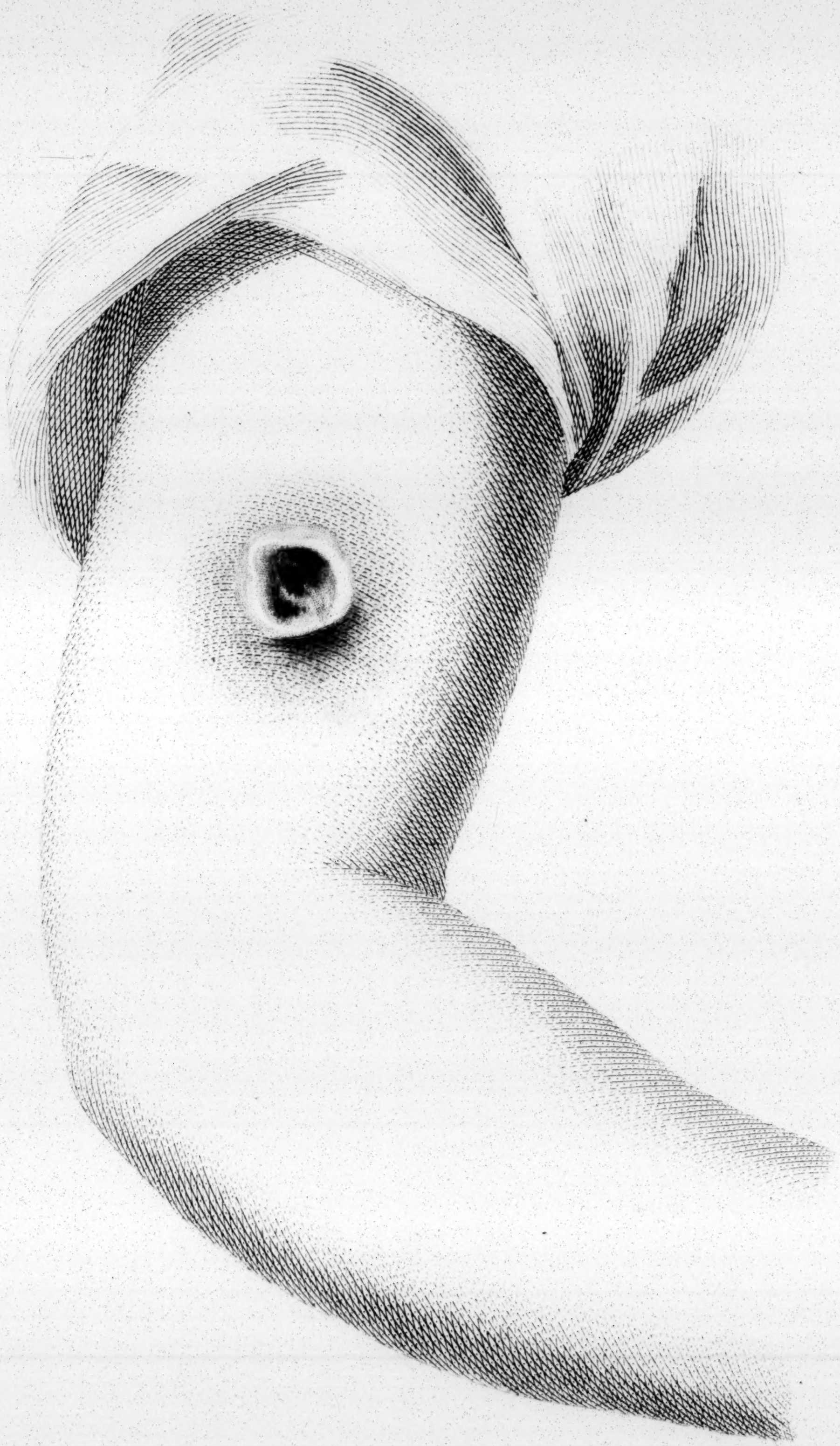
CASE XVIII.

JOHN BAKER, a child of five years old, was inoculated March 16, 1798, with matter taken from a puſtule on the hand of Thomas Virgoe, one of the ſervants who had been infected from the mare's heels. He became ill on the 6th day with ſymptoms ſimilar to thoſe excited by Cow-pox matter. On the 8th day he was free from indiſpoſition.

There was ſome variation in the appearance of the puſtule on the arm. Although it ſomewhat reſembled a Small-pox puſtule, yet its ſimilitude was not ſo conſpicuous as when excited by matter from the nipple of the cow, or when the matter has paſſed from thence through the medium of the human ſubject.—(See Plate, No. 2.)

This experiment was made to aſcertain the progreſs and ſubſequent effects of the diſeaſe when thus propagated.

N°. 2.



Edw.ᵈ Pearce del.ᵗ

Will.ᵐ Skelton sculp.ᵗ

BRITISH
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We have ſeen that the virus from the horſe, when it proves infectious to the human ſubject is not to be relied upon as rendering the ſyſtem ſecure from variolous infection, but that the matter produced by it upon the nipple of the cow is perfectly ſo. Whether its paſſing from the horſe through the human conſtitution, as in the preſent inſtance, will produce a ſimilar effect, remains to be decided. This would now have been effected, but the boy was rendered unfit for inoculation from having felt the effects of a contagious fever in a work-houſe, ſoon after this experiment was made.

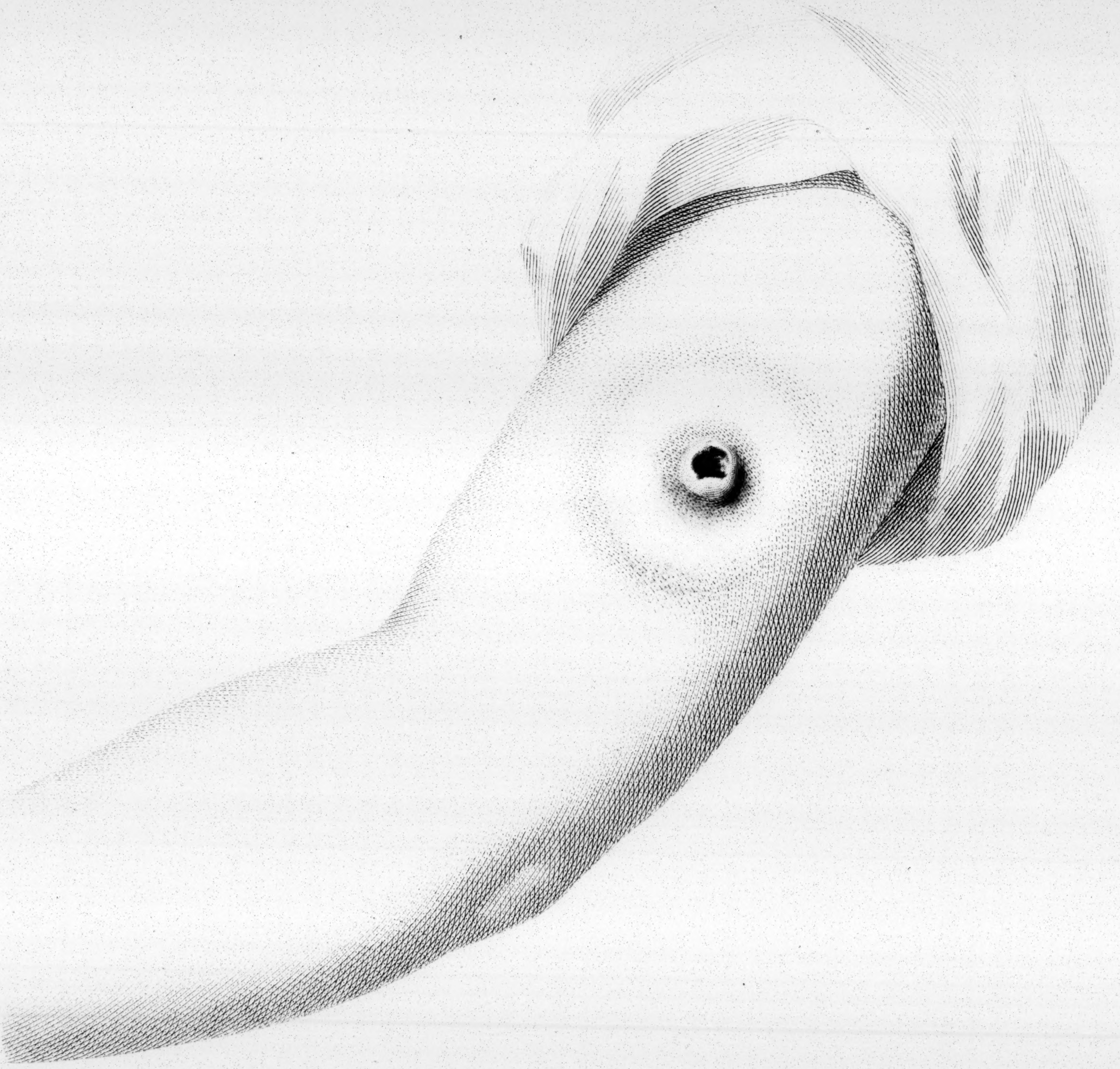
CASE XIX.

WILLIAM SUMMERS, a child of five years and a half old was inoculated the ſame day with Baker, with matter taken from the nipples of one of the infected cows, at the farm alluded to in page 35. He became indiſpoſed on the 6th day, vomited once, and felt the uſual ſlight ſymptoms till the 8th day, when he appeared perfectly well. The progreſs of the puſtule, formed by the infection of the virus was ſimilar to that noticed in Caſe XVII., with this exception, its being free from the livid tint obſerved in that inſtance.

CASE XX.

FROM William Summers the diſeaſe was transfered to William Pead a boy of eight years old, who was inoculated March 28th. On the 6th day he complained of pain in the axilla, and on the 7th was affected with the common ſymptoms of a patient ſickening with the Small-pox from inoculation, which did not terminate 'till the 3d day after the ſeizure. So perfect was the ſimilarity to the variolous fever that I was induced to examine the ſkin, conceiving there might have been ſome eruptions, but none appeared. The effloreſcent bluſh around the part punctured in the boy's arm was ſo truly characteriſtic of that which appears on variolous inoculation, that I have given a repreſentation of it. The drawing was made when the puſtule was begining to die away, and the areola retiring from the centre. (See Plate, No. 3.)

Nº. 3.



Edwᵈ. Pearce delᵗ.

Willᵐ. Skelton sculp.

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CASE XXI.

APRIL 5th. Several children and adults were inoculated from the arm of William Pead. The greater part of them ſickened on the 6th day, and were well on the 7th, but in three of the number a ſecondary indiſpoſition aroſe in conſequence of an extenſive eryſipelatous inflammation which appeared on the inoculated arms. It ſeemed to ariſe from the ſtate of the puſtule, which ſpread out, accompanied with ſome degree of pain, to about half the diameter of a ſix-pence. One of theſe patients was an infant of half a year old. By the application of mercurial ointment to the inflamed parts (a treatment recommended under ſimilar circumſtances in the inoculated Small-pox) the complaint ſubſided without giving much trouble.

HANNAH EXCELL an healthy girl of ſeven years old, and one of the patients above mentioned, received the infection from the inſertion of the virus under the cuticle of the arm in three diſtinct points. The puſtules which aroſe in conſequence, ſo much reſembled, on the 12th day, thoſe appearing from the inſertion of variolous matter, that an experienced Inoculator would ſcarcely have diſcovered a ſhade of difference at that period. Experience now tells me that almoſt the only variation which follows conſiſts in the puſtulous fluids remaining limpid nearly to the time of its total diſappearance; and not, as in the direct Small-pox, becoming purulent.—(See Plate, No. 4.)

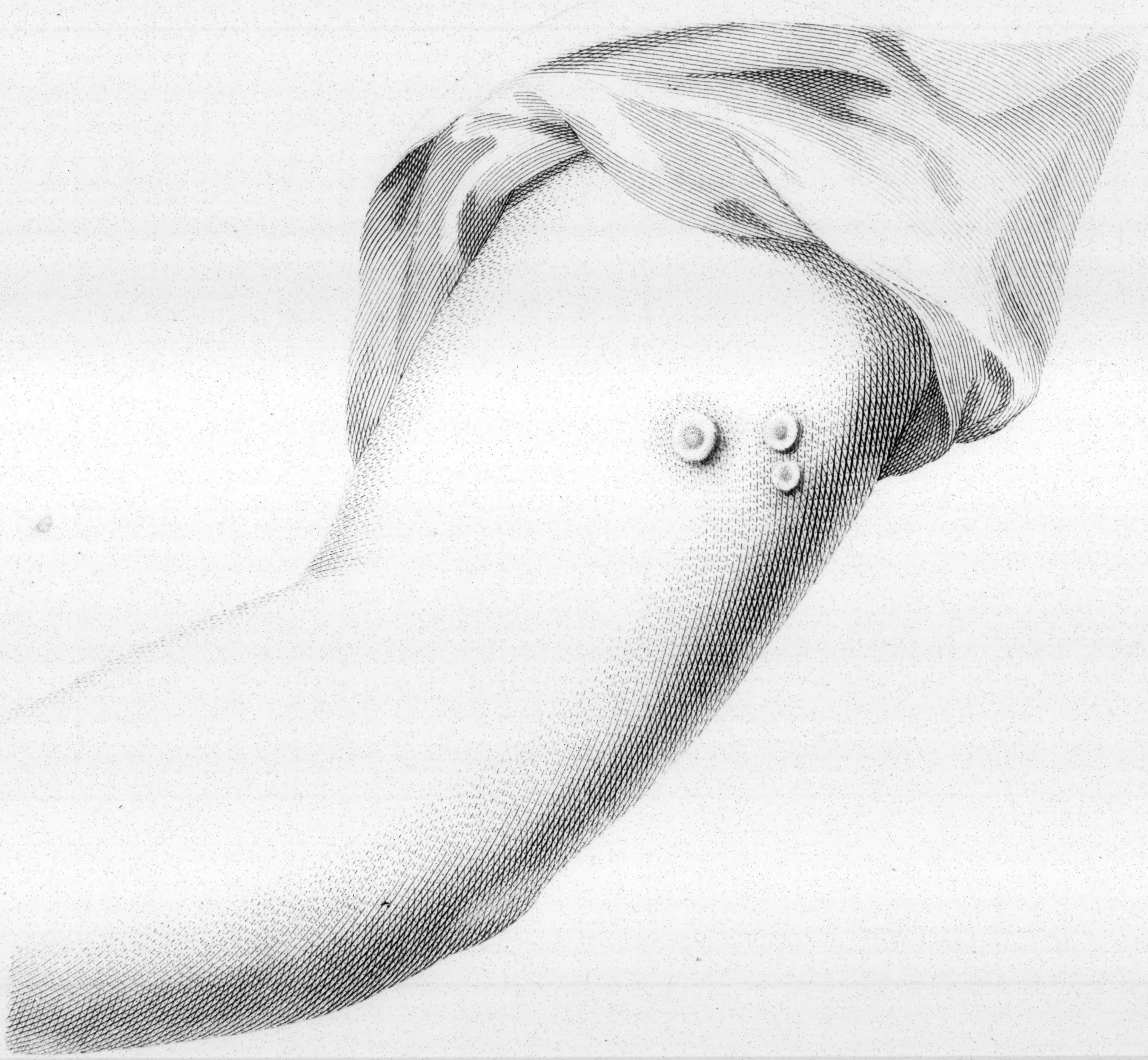
CASE XXII.

FROM the arm of this girl matter was taken and inſerted April 12th into the arms of John Macklove one year and a half old,

Robert F. Jenner, eleven months old,
Mary Pead, 5 years old, and
Mary James, 6 years old.

Among

No. 4.



Edwd. Pearce delt. *Willm. Skelton sculpt.*

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Among theſe Robert F. Jenner did not receive the infection. The arms of the other three inflamed properly and began to affect the ſyſtem in the uſual manner; but being under ſome apprehenſions from the preceding Caſes that a troubleſome eryſipelas might ariſe, I determined on making an experiment with the view of cutting off its ſource. Accordingly after the patients had felt an indiſpoſition of about twelve hours, I applied in two of theſe Caſes out of the three, on the veſicle formed by the virus, a little mild cauſtic, compoſed of equal parts of quick-lime and ſoap, and ſuffered it to remain on the part ſix hours *. It ſeemed to give the children but little uneaſineſs, and effectually anſwered my intention in preventing the appearance of eryſipelas. Indeed it ſeemed to do more, for in half an hour after its application, the indiſpoſition of the children ceaſed †. Theſe precautions were perhaps unneceſſary as

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* Perhaps a few touches with the lapis ſcepticus would have proved equally efficacious.

† What effect would a ſimilar treatment produce in inoculation for the Small-pox?

the arm of the third child, Mary Pead, which was ſuffered to take its common courſe, ſcabbed quickly, without any eryſipelas.

CASE XXIII.

FROM this child's arm matter was taken and transferred to that of J. Barge, a boy of ſeven years old. He ſickened on the 8th day, went through the diſeaſe with the uſual ſlight ſymptoms, and without any inflammation on the arm beyond the common efflореſcence ſurrounding the puſtule, an appearance ſo often ſeen in inoculated Small-pox.

After the many fruitleſs attempts to give the Small-pox to thoſe who had had the Cow-pox, it did not appear neceſſary, nor was it convenient to me, to inoculate the whole of thoſe who had been the ſubjects of theſe late trials; yet I thought it right to ſee the effects of variolous matter on ſome of them, particularly William Summers, the firſt of theſe patients who had been infected with matter taken from the cow. He was therefore inoculated with variolous matter from a freſh puſtule; but, as in the preceding Caſes, the ſyſtem did not feel the effects of it in the ſmalleſt degree. I had an opportunity alſo of having this boy and William Pead inoculated by my Nephew, Mr. Henry Jenner, whoſe report to me is as follows: "I have inoculated Pead and Barge, two of the boys whom you lately infected with the Cow-pox. On the 2d day the inciſions were inflamed and there was a pale inflammatory ſtain around them. On the 3d day theſe appearances were ſtill increaſing and their arms itched conſiderably. On the 4th day, the inflammation was evidently ſubſiding, and on the 6th it was ſcarcely perceptible. No ſymptom of indiſpoſition followed.

To convince myſelf that the variolous matter made uſe of was in a perfect ſtate, I at the ſame time inoculated a patient with ſome of it who never had gone through the Cow-pox, and it produced the Small-pox in the uſual regular manner."

Theſe experiments afforded me much ſatisfaction, they proved that the matter in paſſing from one human ſubject to another, through five gradations, loſt none of its original properties, J. Barge being the fifth who received the infection ſucceſſively from William Summers, the boy to whom it was communicated from the cow.

I ſhall now conclude this Inquiry with ſome general obſervations on the ſubject and on ſome others which are interwoven with it.

Although I preſume it may be unneceſſary to produce further teſtimony in ſupport of my aſſertion "that the Cow-pox protects the human conſtitution from the infection of the Small-pox," yet it affords me conſiderable ſatisfaction to ſay, that Lord Somerville, the Preſident of the Board of Agriculture, to whom this paper was ſhewn by Sir Joſeph Banks, has found upon inquiry that the ſtatements were confirmed by the concuring teſtimony of Mr. Dolland, a ſurgeon, who reſides in a dairy country remote from this, in which theſe obſervations were made. With reſpect to the opinion adduced "that the ſource of the infection is a peculiar morbid matter ariſing in the horſe," although I have not been able to prove it from actual experiments conducted immediately under my own eye, yet the evidence I have adduced appears ſufficient to eſtabliſh it.

They who are not in the habit of conducting experiments may not be aware of the coincidence of circumſtances neceſſary for their being managed ſo as to prove perfectly deciſive; nor how often men engaged in profeſſional purſuits are liable to interruptions which diſappoint them almoſt at the inſtant of their being accompliſhed: however, I feel no room for heſitation reſpecting the common origin of the diſeaſe, being well convinced that it never appears among the cows (except it can be traced to a cow introduced among the general herd which has been previouſly infected, or to an infected ſervant), unleſs they have been milked by ſome one who, at the ſame time, has the care of a horſe affected with diſeaſed heels.

The ſpring of the year 1797, which I intended particularly to have devoted to the completion of this inveſtigation, proved, from its dryneſs, remarkably adverſe to my wiſhes; for it frequently happens, while the farmers' horſes are expoſed to the cold rains which fall at that ſeaſon that their heels become diſeaſed, and no Cow-pox then appeared in the neighbourhood.

The active quality of the virus from the horſes' heels is greatly increaſed after it has acted on the nipples of the cow, as it rarely happens that the horſe affects his dreſſer with ſores, and as rarely that a milk-maid eſcapes the infection when ſhe milks infected cows. It is moſt active at the commencement of the diſeaſe, even before it has acquired a pus-like appearance; indeed I am not confident whether this property in the matter does not entirely ceaſe as ſoon as it is ſecreted in the form of pus. I am induced to think it does ceaſe*, and that it is the thin darkiſh-looking fluid only, oozing from the newly-formed cracks in the heels, ſimilar to what ſometimes appears from eryſipelatous bliſters, which gives the diſeaſe. Nor am I certain that the nipples of the cows are at all times in a ſtate to receive the infection. The appearance of the diſeaſe in the ſpring and the

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[*] It is very eaſy to procure pus from old ſores on the heels of horſes. This I have often inſerted into ſcratches made with a lancet, on the ſound nipples of cows, and have ſeen no other effects from it than ſimple inflammation.

early part of the ſummer, when they are diſpoſed to be affected with ſpontaneous eruptions ſo much more frequently than at other ſeaſons, induces me to think, that the virus from the horſe muſt be received upon them when they are in this ſtate, in order to produce effects: experiments, however, muſt determine theſe points. But it is clear that when the Cow-pox virus is once generated, that the cows cannot reſiſt the contagion, in whatever ſtate their nipples may chance to be, if they are milked with an infected hand.

Whether the matter, either from the cow or the horſe will affect the ſound ſkin of the human body, I cannot poſitively determine; probably it will not, unleſs on thoſe parts where the cuticle is extremely thin, as on the lips for example.

I have known an inſtance of a poor girl who produced an ulceration on her lip by frequently holding her finger to her mouth to cool the raging of a Cow-pox ſore by blowing upon it. The hands of the farmers' ſervants here, from the nature of their employments, are conſtantly expoſed to thoſe injuries which occaſion abraſions of the cuticle, to punctures from thorns and ſuch like accidents; ſo that they are always in a ſtate to feel the conſequences of expoſure to infectious matter.

It is ſingular to obſerve that the Cow-pox virus, although it renders the conſtitution unſuſceptible of the variolous, ſhould, nevertheleſs, leave it unchanged with reſpect to its own action. I have already produced an inſtance[*] to point out this, and ſhall now corroborate it with another.

Elizabeth Wynne, who had the Cow-pox in the year 1759, was inoculated with variolous matter, without effect, in the year 1797, and again caught the Cow-pox in the year 1798. When I ſaw her, which was on the 8th day after ſhe received the infection, I found her affected with general laſſitude, ſhiverings, alternating with heat, coldneſs of the extremities, and a quick and irregular pulſe. Theſe ſymptoms were preceded by a pain in the axilla. On her hand was one large puſtulous ſore, which reſembled that delinated in Plate No. 1.

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[*] See Caſe IX.

It is curious alſo to obſerve, that the virus, which with reſpect to its effects is undetermined and uncertain previouſly to its paſſing from the horſe through the medium of the cow, ſhould then not only become more active, but ſhould invariably and completely poſſeſs thoſe ſpecific properties which induce in the human conſtitution ſymptoms ſimilar to thoſe of the variolous fever, and effect in it that peculiar change which for ever renders it unſuſceptible of the variolous contagion.

May it not, then, be reaſonably conjectured, that the ſource of the Small-pox is morbid matter of a peculiar kind, generated by a diſeaſe in the horſe, and that accidental circumſtances may have again and again ariſen, ſtill working new changes upon it, until it has acquired the contagious and malignant form under which we now commonly ſee it making its devaſtations amongſt us? And, from a conſideration of the change which the infectious matter undergoes from producing a diſeaſe on the cow, may we not conceive that many contagious diſeaſes, now prevalent among us, may owe their preſent appearance not to a ſimple, but to a compound origin? For example, is it difficult to imagine that the meaſles, the ſcarlet fever, and the ulcerous ſore throat with a ſpotted ſkin, have all ſprung from the ſame ſource, aſſuming ſome variety in their forms according to the nature of their new combinations? The ſame queſtion will apply reſpecting the origin of many other contagious diſeaſes, which bear a ſtrong analogy to each other.

There are certainly more forms than one, without conſidering the common variation between the confluent and diſtinct, in which the Small-pox appears in what is called the natural way.—About ſeven years ago a ſpecies of Small-pox ſpread through many of the towns and villages of this part of Glouceſterſhire: it was of ſo mild a nature, that a fatal inſtance was ſcarcely ever heard of, and conſequently ſo little dreaded by the lower orders of the community, that they ſcrupled not to hold the ſame intercourſe with each other as if no infectious diſeaſe had been preſent among them. I never ſaw nor heard of an inſtance of its being confluent. The moſt accurate manner, perhaps, in which I can convey an idea of it is, by ſaying, that had fifty individuals been taken promiſcuouſly and infected by expoſure to this contagion, they would have had as mild and light a diſeaſe as if they had been inoculated with variolous matter in the uſual way. The harmleſs manner in which it ſhewed itſelf could not ariſe from any peculiarity either in the ſeaſon or the weather, for I watched its progreſs upwards of a year without perceiving any variation in its general appearance. I conſider it then as a *variety* of the Small-pox *.

In ſome of the preceding caſes I have noticed the attention that was paid to the ſtate of the variolous matter previous to the experiment of inſerting it into the arms of thoſe who had gone through the Cow-pox. This I conceived to be of great importance in conducting theſe experiments, and were it always properly attended to by thoſe who inoculate for the Small-pox, it might prevent much ſubſequent miſchief and confuſion. With the view of enforcing ſo neceſſary a precaution, I ſhall take the liberty of digreſſing ſo far as to point out ſome unpleaſant facts, relative to miſmanagement in this particular, which have fallen under my own obſervation.

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* My friend Dr. Hicks, of Briſtol, who during the prevalence of this diſtemper was reſident at Glouceſter, and Phyſician to the Hoſpital there, (where it was ſeen ſoon after its firſt appearance in this country) had opportunities of making numerous obſervations upon it, which it is his intention to communicate to the Public.

A Medical Gentleman (now no more), who for many years inoculated in this neighbourhood, frequently preſerved the variolous matter intended for his uſe, on a piece of lint or cotton, which, in its fluid ſtate was put into a vial, corked, and conveyed into a warm pocket; a ſituation certainly favourable for ſpeedily producing putrefaction in it. In this ſtate (not unfrequently after it had been taken ſeveral days from the puſtules) it was inſerted into the arms of his patients, and brought on inflammation of the inciſed parts, ſwellings of the axillary glands, fever, and ſometimes eruptions. But what was this diſeaſe? Certainly not the Small-pox; for the matter having from putrefaction loſt, or ſuffered a derangement in its ſpecific properties, was no longer capable of producing that malady, thoſe who had been inoculated in this manner being as much ſubject to the contagion of the Small-pox, as if they had never been under the influence of this artificial diſeaſe; and many, unfortunately, fell victims to it, who thought themſelves in perfect ſecurity. The ſame unfortunate circumſtance of giving a diſeaſe, ſuppoſed to be the Small-pox, with inefficaceous variolous matter, having occurred under the direction of ſome other practitioners within my knowledge, and probably from the ſame incautious method of ſecuring the variolous matter, I avail myſelf of this opportunity of mentioning what I conceive to be of great importance; and, as a further cautionary hint, I ſhall again digreſs ſo far as to add another obſervation on the ſubject of Inoculation

Whether it be yet aſcertained by experiment, that the quantity of variolous matter inſerted into the ſkin makes any difference with reſpect to the ſubſequent mildneſs or violence of the diſeaſe, I know not; but I have the ſtrongeſt reaſon for ſuppoſing that if either the punctures or inciſions be made ſo deep as to go *through* it, and wound the adipoſe membrane, that the riſk of bringing on a violent diſeaſe is greatly increaſed. I have known an inoculator, whoſe practice was "to cut deep enough (to uſe his own expreſſion) to ſee a bit of fat," and there to lodge the matter. The great number of bad Caſes, independent of inflammations and abſceſſes on the arms, and the fatality which attended this practice was almoſt inconceivable; and I cannot account for it on any other principle than that of the matter being placed in this ſituation inſtead of the ſkin.

It was the practice of another, whom I well remember, to pinch up a ſmall portion of the ſkin on the arms of his patients and to paſs through it a needle, with a thread attached to it previouſly dipped in variolous matter. The thread was lodged in the perforated part, and conſequently left in contact with the cellular membrane. This practice was attended with the ſame ill ſucceſs as the former. Although it is very improbable that any one would now inoculate in this rude way by deſign, yet theſe obſervations may tend to place a double guard over the lancet, when infants, whoſe ſkins are comparatively ſo very thin, fall under the care of the inoculator.

A very reſpectable friend of mine, Dr. Hardwicke, of Sodbury in this county, inoculated great numbers of patients previous to the introduction of the more moderate method by Sutton, and with ſuch ſucceſs, that a fatal inſtance occurred as rarely as ſince that method has been adopted. It was the doctor's practice to make as ſlight an inciſion as poſſible *upon* the ſkin, and there to lodge a thread ſaturated with the variolous matter. When his patients became indiſpoſed, agreeably to the cuſtom then prevailing, they were directed to go to bed and were kept moderately warm. Is it not probable then, that the ſucceſs of the modern practice may depend more upon the method of invariably depoſiting the virus in or upon the ſkin, than on the ſubſequent treatment of the diſeaſe?

I do not mean to inſinuate that expoſure to cool air, and ſuffering the patient to drink cold water when hot and thirſty, may not moderate the eruptive ſymptoms and leſſen the number of puſtules;

yet, to repeat my former obſervation, I cannot account for the uninterrupted ſucceſs, or nearly ſo, of one practitioner, and the wretched ſtate of the patients under the care of another, where, in both inſtances, the general treatment did not differ eſſentially, without conceiving it to ariſe from the different modes of inſerting the matter for the purpoſe of producing the diſeaſe. As it is not the identical matter inſerted which is abſorbed into the conſtitution, but that which is, by ſome peculiar proceſs in the animal economy, generated by it, is it not probable that different parts of the human body may prepare or modify the virus differently? Although the ſkin, for example, adipoſe membrane, or mucous membranes are all capable of producing the variolous virus by the ſtimulus given by the particles originally depoſited upon them, yet I am induced to conceive that each of theſe parts is capable of producing ſome variation in the qualities of the matter previous to its affecting the conſtitution. What elſe can conſtitute the difference between the Small-pox when communicated caſually or in what has been termed the natural way, or when brought on artificially through the medium of the ſkin? After all, are the variolous particles, poſſeſſing their true ſpecific and contagious principles, ever taken up and conveyed by the lymphatics unchanged into the blood veſſels? I imagine not. Were this the caſe, ſhould we not find the blood ſufficiently loaded with them in ſome ſtages of the Small-pox to communicate the diſeaſe by inſerting it under the cuticle, or by ſpreading it on the ſurface of an ulcer? Yet experiments have determined the impracticability of its being given in this way; although it has been proved that variolous matter when much diluted with water, and applied to the ſkin in the uſual manner, will produce the diſeaſe. But it would be digreſſing beyond a proper boundary, to go minutely into this ſubject here.

At what period the Cow-pox was firſt noticed here is not upon record. Our oldeſt farmers were not unacquainted with it in their earlieſt days, when it appeared among their farms without any deviation from the phænomena which it now exhibits. Its connection with the Small-pox ſeems to have been unknown to them. Probably the general introduction of inoculation firſt occaſioned the diſcovery.

Its riſe in this country may not have been of very remote date, as the practice of milking cows might formerly have been in the hands of women only; which I believe is the caſe now in ſome other dairy countries, and, conſequently that the cows might not in former times have been expoſed to the contagious matter brought by the men ſervants from the heels of horſes*. Indeed a knowledge of the ſource of the infection is new in the minds of moſt of the farmers in this neighbourhood, but it has at length produced good conſequences; and it ſeems probable from the precautions they are now diſpoſed to adopt, that the appearance of the Cow-pox here may either be entirely extinguiſhed or become extremely rare.

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* I have been informed from reſpectable authority that in Ireland, although dairies abound in many parts of the Iſland, the diſeaſe is entirely unknown. The reaſon ſeems obvious. The buſineſs of the dairy is conducted by women only. Were the meaneſt vaſſal among the men, employed there as a milker at a dairy, he would feel his ſituation unpleaſant beyond all endurance.

Should it be aſked whether this inveſtigation is a matter of mere curioſity, or whether it tends to any beneficial purpoſe? I ſhould anſwer, that notwithſtanding the happy effects of Inoculation, with all the improvements which the practice has received ſince its firſt introduction into this country, it not very unfrequently produces deformity of the ſkin, and ſometimes, under the beſt management, proves fatal.

Theſe circumſtances muſt naturally create in every inſtance ſome degree of painful ſolicitude for its conſequences. But as I have never known fatal effects ariſe from the Cow-pox, even when impreſſed in the moſt unfavourable manner, producing extenſive inflammations and ſuppurations on the hands; and as it clearly appears that this diſeaſe leaves the conſtitution in a ſtate of perfect ſecurity from the infection of the Small-pox, may we not infer that a mode of Inoculation may be introduced preferable to that at preſent adopted, eſpecially among thoſe families, which, from previous circumſtances we may judge to be prediſpoſed to have the diſeaſe unfavourably? It is an exceſs in the number of puſtules which we chiefly dread in the Small-pox; but, in the Cow-pox, no puſtules appear, nor does it ſeem poſſible for the contagious matter to produce the diſeaſe from effluvia, or by any other means than contact, and that probably not ſimply between the virus and the cuticle; ſo that a ſingle individual in a family might at any time receive it without the riſk of infecting the reſt, or of ſpreading a diſtemper that fills a country with terror. Several inſtances have come under my obſervation which juſtify the aſſertion that the diſeaſe cannot be propagated by effluvia. The firſt boy whom I inoculated with the matter of Cow-pox, ſlept in a bed, while the experiment was going forward, with two children who never had gone through either that diſeaſe or the Small-pox, without infecting either of them.

A young woman who had the Cow-pox to a great extent, ſeveral ſores which maturated having appeared on the hands and wriſts, ſlept in the ſame bed with a fellow-dairy maid who never had been infected with either the Cow-pox or the Small-pox, but no indiſpoſition followed.

Another inſtance has occurred of a young woman on whoſe hands were ſeveral large ſuppurations from the Cow-pox, who was at the ſame time a daily nurſe to an infant, but the complaint was not communicated to the child.

In ſome other points of view, the inoculation of this diſeaſe appears preferable to the variolous inoculation.

In conſtitutions prediſpoſed to ſcrophula, how frequently we ſee the inoculated Small-pox, rouſe into activity that diſtreſsful malady. This circumſtance does not ſeem to depend on the manner in which the diſtemper has ſhewn itſelf, for it has as frequently happened among thoſe who have had it mildly, as when it has appeared in the contrary way.

There are many, who from ſome peculiarity in the habit reſiſt the common effects of variolous matter inſerted into the ſkin, and who are in conſequence haunted through life with the diſtreſſing idea of being inſecure from ſubſequent infection. A ready mode of diſſipating anxiety originating from ſuch a cauſe muſt now appear obvious. And, as we have ſeen that the conſtitution may at any time be made to feel the febrile attack of Cow-pox, might it not, in many chronic diſeaſes be introduced into the ſyſtem, with the probability of affording relief, upon well-known phyſiological principles?

Although I ſay the ſyſtem may at any time be made to feel the febrile attack of Cow-pox, yet I have a ſingle inſtance before me where the virus acted locally only, but it is not in the leaſt probable that the ſame perſon would reſiſt the action both of the Cow-pox virus and the variolous.

Elizabeth Sarſenet lived as a dairy maid at New-park farm, in this pariſh. All the cows and the ſervants employed in milking had the Cow-pox; but this woman, though ſhe had ſeveral ſores upon her fingers, felt no tumors in the axillæ, nor any general indiſpoſition. On being afterwards caſually expoſed to variolous infection, ſhe had the Small-pox in a mild way.—Hannah Pick, another of the dairy maids who was a fellow-ſervant with Elizabeth Sarſenet when the diſtemper broke out at the farm was, at the ſame time infected; but this young woman had not only ſores upon her hands, but felt herſelf alſo much indiſpoſed for a day or two. After this, I made ſeveral attempts to give her the Small-pox by inoculation, but they all proved fruitleſs. From the former Caſe then we ſee that the animal economy is ſubject to the ſame laws in one diſeaſe as the other.

The following Caſe which has very lately occurred renders it highly probable that not only the heels of the horſe, but other parts of the body of that animal, are capable of generating the virus which produces the Cow-pox.

An extenſive inflammation of the eryſipelatous kind, appeared without any apparent cauſe upon the upper part of the thigh of a ſucking colt, the property of Mr. Millet, a farmer at Rockhampton, a village near Berkeley. The inflammation continued ſeveral weeks, and at length terminated in the formation of three or four ſmall abſceſſes. The inflamed parts were fomented, and dreſſings were applied by ſome of the ſame perſons who were employed in milking the cows. The number of cows milked was twenty-four, and the whole of them had the Cow-pox. The milkers, conſiſting of the farmer's wife, a man and a maid ſervant, were infected by the cows. The man ſervant had previouſly gone through the Small-pox, and felt but little of the Cow-pox. The ſervant maid had ſome years before been infected with the Cow-pox, and ſhe alſo felt it now in a ſlight degree: But the farmer's wife who never had gone through either of theſe diſeaſes, felt its effects very ſeverely.

That the diſeaſe produced upon the cows by the colt and from thence conveyed to thoſe who milked them was the *true* and not the *ſpurious* Cow-pox*, there can be ſcarcely any room for ſuſpicion; yet it would have been more completely ſatisfactory, had the effects of variolous matter been aſcertained on the farmer's wife, but there was a peculiarity in her ſituation which prevented my making the experiment.

Thus far have I proceeded in an inquiry, founded, as it muſt appear, on the baſis of experiment; in which, however, conjecture has been occaſionally admitted in order to preſent to perſons well ſituated for ſuch diſcuſſions, objects for a more minute inveſtigation. In the mean time I ſhall myſelf continue to proſecute this inquiry, encouraged by the hope of its becoming eſſentially beneficial to mankind.

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* See Note in Page 7.

FINIS.

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ERRATA.

Page 5, Line 4, after the word *ſhiverings* inſert *ſucceeded by heat.*
Line 16, for *needleſsly* read *heedleſsly.*

—— 24, Laſt line but one, for *ſore* read *tumour.*

—— 40, Line 12, for *Macklove* read *Marklove.*

—— 41, Note—for *ſcepticus* read *ſepticus.*

—— 60, Laſt line, for *moderate* read *modern.*

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